



ECO1200 User Manual

Includes installation, standard operating procedures and maintenance guide for the ECO1200



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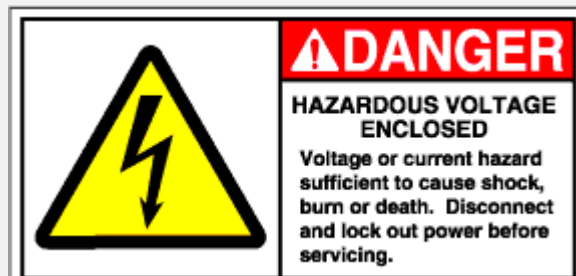
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Safety Warnings

For your safety and the safety of your equipment please follow all safety procedures outlined in this manual and do not attempt installation unless you have read and fully understand the manual.

Follow the proper procedure for shut down of the wind turbine if any of the following situations occur:

- Any of the parts become damaged or broken or are malfunctioning
- Electrical repairs are required
- Before extreme weather conditions arise

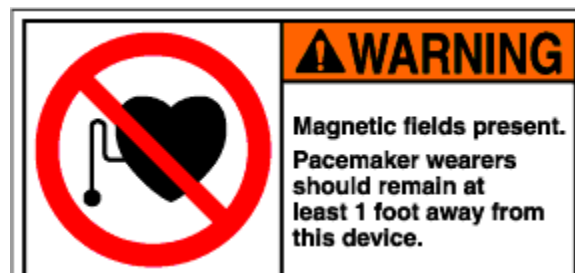


Hazardous Voltage Enclosed: Do not attempt electrical installation or repairs while turbine is spinning

Be sure that you always do the following:

- Read all the installation instructions before assembling the wind turbine
- Keep this manual for reference purposes and scheduled maintenance
- Always follow instructions and warnings about the wind turbine

Do not interfere with a spinning wind turbine, it can cause serious injury!



The generator contains permanent magnets which can interfere with a pacemaker

Introduction

The Windterra ECO1200 converts the movement of air into useful electrical power. The turbine blades harness the kinetic energy of the wind coming from any direction and transfer it to the generator located under the hub. When spinning, the generator outputs power to the inverter located inside the house. The inverter converts the wild 3-phase electricity from the generator into 1-phase power compatible with the electrical grid.

The User Manual describes the operating procedures for the ECO1200 roof mounted Vertical Axis Wind Turbine (VAWT). This manual is intended for the owner of a Windterra ECO1200, and any individual performing general maintenance or inspection of the turbine or electrical system.

The Windterra wind turbine is maintenance free. Familiarize yourself with the operation of the wind turbine and perform general inspections as noted in this guide. Any mechanical or electrical repairs other than what is explained in this guide must be performed by qualified personnel.

The turbine will automatically start operating in low winds. The blades will start to spin and build speed as the wind increases. The electrical inverter automatically converts the electricity produced by the generator into usable power. Changes in wind direction have no effect on the vertical axis design. As the wind speed changes, the turbine and inverter adjust to maintain the maximum power output.

A passive braking system is incorporated into the design of the blades to govern the maximum speed of rotation. This brake operates automatically to prevent the turbine from over spinning. Once the wind speed returns to normal operating conditions the braking stops.

The wind turbine has been designed for installation on the crest of a pitched roof or on a flat roof. Do not attempt installation on a pole or other external supporting structure.

Only the Windterra ECO1200 Inverter is to be used with the ECO1200 Wind Turbine, use of a different inverter will void the warranty.



- **An application for connecting to your local electrical utility must be completed and approved prior to installation of the Windterra ECO1200.**
- **Consult with your municipality concerning local bylaws and permit requirements prior to the installation of the ECO1200.**
- **Structural certification of your roof must be completed prior to installation to ensure that it is suitable to hold the ECO1200.**

Specifications

Wind Turbine Specifications

Blade Height: 2.25m	Cut-in Wind Speed: 3m/s
Rotor Diameter: 2.66m	Generator: Permanent magnet 3-phase
Configuration: 3 Blade Vertical Axis	Roof Mount Weight: 51kg
Frequency: 0-60Hz	Turbine Weight: 183kg
Max Turbine Voltage: 150VAC per phase	Survival wind speed: 53m/s
Max Continuous Current: 4.0A	Over Speed Control: Passive Air Brake
Max Braking Start-up Current: 15A	RPM Range: 0-270
Maximum Power: 1200W	

Inverter Specifications

Inverter Type: Grid-Tie	Operating Voltage Range: 105-132 Vrms
Input Power Rating: 1330W	Operating Frequency Range: 59.5-60.5 Hz
Electrical Input: Three-phase	Total Harmonic Distortion: < 3%
Max Input Voltage: 150 Vac peak/phase	Operating Temperature Range: 0° to +40° Celsius
Max Input Current: 3.6 Aac peak/phase	Certifications: CSA 22.2 107.1 and UL 1741
Output Voltage: 120 Vrms True Sine Wave	Enclosure Weight: 5.5kg (12lb)
Max Output Current: 10 Arms True Sine Wave	Enclosure Rating: NEMA Type I
Power Factor at Output: > 0.99	Size: 300mm x 300mm x 100mm
Max Efficiency: > 90%	

Installation

This section describes the installation procedure for the ECO1200. The installation process has been simplified for your convenience. The only tools required are:

- 9/16" socket and wrench
- Torque wrench
- 2ft (at minimum) bubble level
- 3/8" Drill Bit and Drill
- Roof Sealant

NOTE: Always use a torque wrench to tighten the bolts: 3/8" Bolt Torque = 30 ft-lbs (41 N-m).

Bolt lengths are mentioned throughout the installation manual for your reference. The bolt length is measured from the underside of the head to the end, ie: the shaft length. See picture below of a measured bolt. Ensure to use the correct size of bolt when assembling the turbine. All hardware is included with the turbine.

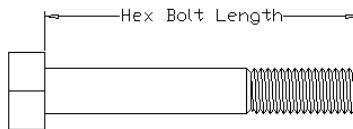


Figure 1 – Hex Bolt Length Measurement

Turbine Placement

Turbine placement is integral for maximum turbine performance. Smooth, undisturbed airflow is the optimum condition for the turbine. Obstructions in the dominant upwind direction should be avoided.

Place the turbine on the crest of the highest section of the roof directly above a supporting wall. Surrounding trees, buildings and geographical features can obstruct the airflow. Select an area away from roof obstructions such as chimneys, ventilation and air conditioning units, lightning rods, antennas and satellite dishes. Small elements on the roof such as exhaust air hoods, skylights and roof drains should also be avoided. The following diagram shows the turbine mounted on the highest roof crest at a supporting wall and away from roof obstructions.

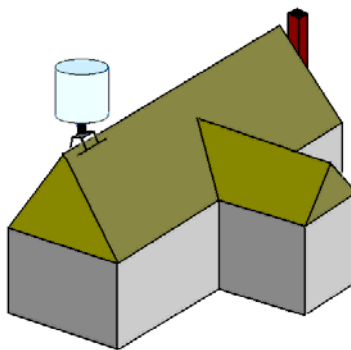


Figure 2 – Proper Turbine Roof Placement

Turbine Assembly

This section describes the step-by-step process for installing the Windterra ECO1200 Wind Turbine. The installation steps include Roof Mount Assembly, Attaching the Roof Mount, Roof Bracing, Generator Frame Assembly, Electrical Installation, Hub, Arm and Blade Assembly and Cover Assembly.

1 Roof Mount Assembly

The roof mount securely attaches to the roof and provides a level surface for the generator frame. The figure below shows the completed assembly.

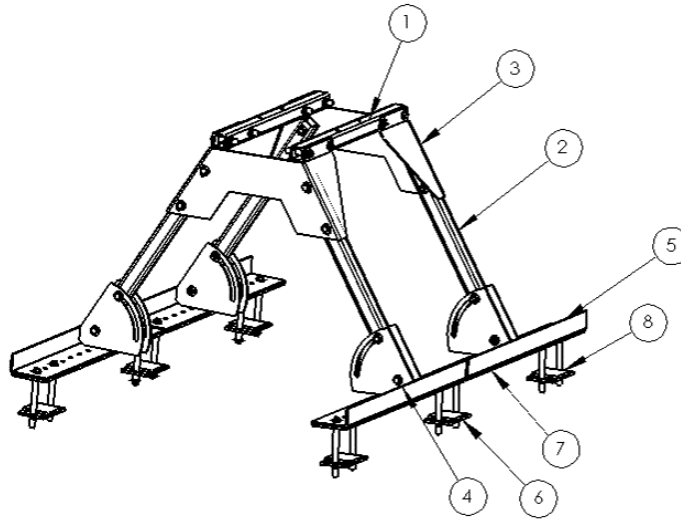


Figure 3 - Roof Mount Assembly

1. Top Tube
2. Leg Tube
3. Side Plate
4. Left Leg Bracket
5. Right Leg Bracket
6. Rafter Plate
7. Roof Rubber
8. Rafter Rubber

- 1.1** First, bolt a Leg Tube to each of the four Leg Brackets. Ensure you are using a Leg Tube; the Leg Tubes have fewer holes than the Top Tubes. Place a washer on both sides of every bolt. Leave all the bolts loose to allow adjustment of the plate angle. Next, bolt the other end of the Leg Tubes to the slotted holes in the two Side Plates. The short ends of the Leg Bracket plates butt together between the two legs. Again, leave the bolts loose. The slotted holes allow for easy leveling of the top of the roof mount. Lastly, bolt the remaining two Top Tubes in place between the two Side Plates to complete the assembly. Tighten the nuts on these bolts just enough to prevent the tubes from shifting. Do not fully torque the nuts, this will occur later. See the figure below for the assembled roof mount on the roof.



Figure 4 - Assembled Roof Mount on Roof

- 1.2** The roof mount should be centered over the crest of the roof. Push the Side Plates down and ensure all eight bolts in the slotted holes are at the top of each slot. The following figure shows the position of the bolts at the top of the slotted holes.



Figure 5 – Proper Bolt Position at Top of Slotted Holes on Side Plates

2 Attaching the Roof Mount to the Roof

The roof mount is secured to the roof using the six sets of rafter clamps. Each rafter clamp consists of one Rafter Plate, two long 3/8" bolts, four washers, two nuts, and one piece of Rafter Rubber. 3/8"-16 threaded rod of required length may be used if roof uses non standard rafters. Three (3) rafters must be sandwiched if the rafter spacing is 24" on center or less. A rafter will be placed at each end of the Leg Bracket and one will connect the two brackets together in the center.



Figure 6 - Drilling of Rafter Placement Hole. Dashed lines shows where the rafter is under the roof

- 2.1 From underneath the roof, drill a pilot hole up through the roof 1" to the side of a structural rafter as shown in the picture below. This will mark the position of the rafters for final placement of the roof mount. See the figure above for drilling of the pilot hole.
- 2.2 Using the drilled pilot hole, align the three sets of holes in the Roof Brackets to be over the rafters. Place the Roof Rubber under the Leg Brackets then maneuver the unit as needed to level the top surface. This will be the final placement of the roof mount. See picture below of leveled roof mount.



Figure 7 - Leveled Roof Mount

- 2.3 Use the holes in the Roof Brackets for placement and drill through the Roof Rubber and roof with a 3/8" drill bit as shown in the following picture.



Figure 8 - Drilling of Roof Plate holes

- 2.4** Place a washer over the long 3/8" bolts and insert the bolts through the Leg Brackets and through the drilled holes. Place the Rafter Rubber between the Rafter Plate and the rafter. Place Rafter Plates over the bolts and add a washer and nut. Tighten the nut by having one person on the roof holding a wrench to the bolt head while another person under the roof tightens the nut. Tighten all twelve (12) bolts in the following manner. Move back and forth between the two bolts until the Rafter Rubber is slightly compressed. See the following figure for a completed rafter clamp.



Figure 9 - View of Rafter Clamp from underneath roof

The six rafter clamps secure the roof mount and the rest of the turbine.

3 Roof Bracing

- 3.1** The bracing of the roof is for vibration prevention and additional security. Use 2x4 or 2x6 standard lumber to reinforce the roof. There is no standard roof construction so an exact description cannot be given. Start at the turbine location and reinforce the rafters that have a rafter clamp. Add planks to secure these key rafters to each other then add additional bracing from the turbine location down to the supporting walls. These additional rafters add valuable rigidity to the roof. Brace as much as possible from the turbine location down to the supporting walls.

4 Generator Frame Assembly

- 4.1 Keep the shipping blocks on the bottom of the Generator Frame Assembly and lift the assembly on to the Roof Mount. Once on the roof mount, tilt the frame and remove the blocks. Note: if using a crane, keep the blocks on the Generator Frame Assembly until it is right above the Roof Mount. Align the holes on the generator frame with the matching holes on the roof mount. Insert the 3 ¾" bolts up from under the roof mount and secure with a washer and nut on the top.

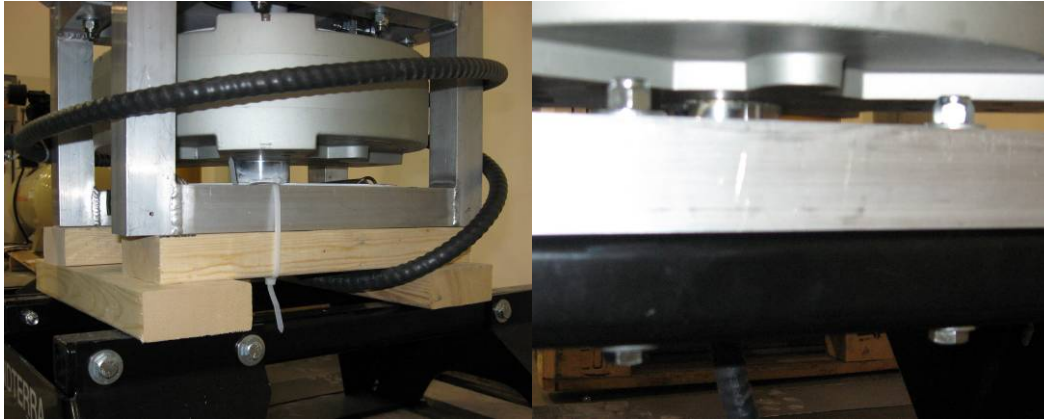


Figure 10 – View of Generator on blocks and View of Mounting Bolts for the Generator

- 4.2 Level the top plate of the Generator Frame Assembly by shifting the position of the Roof Mount bolts in the slotted holes (shown in figure 5) and then checking the bubble level. Ensure the Generator Frame Assembly is completely level by checking the bubble level in two directions perpendicular to each other.

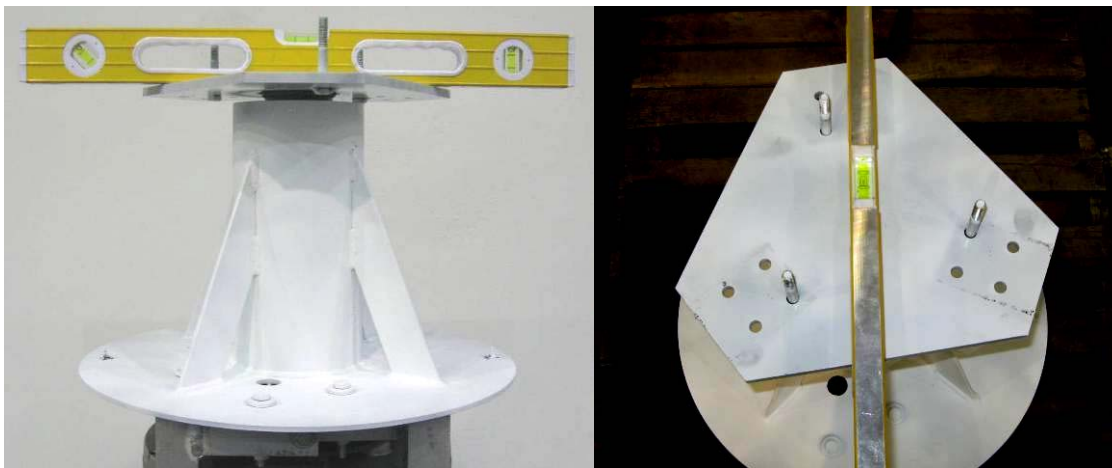


Figure 11 - Leveling of the Generator

- 4.3 Once level, gradually tighten all bolts to specifications. **Do not** tighten one side of the roof mount first and then the other side. Go from side to side and tighten the bolts in increments to ensure that the roof mount and the generator frame will stay level.
- 4.4 Check the level again after all the bolts are tightened and adjust if necessary.

5 Electrical Installation

The electrical installation should be performed by a qualified Electrician and must conform to local electrical code requirements. The Pictorial Wiring Diagram below shows the order of connection for the electrical installation. Refer to Appendix A for a single line diagram with electrical ratings.

The electrical installation is performed now to ensure the **AC Disconnect / Brake Switch** is installed before the blades are installed. The **AC Disconnect / Brake Switch** is used to prevent the turbine from spinning which is helpful during installation. Once the electrical installation is complete, turn the **AC Disconnect / Brake Switch** to position “2” to activate the turbine brake. Then test the resistance when spinning the generator. Test that the generator is harder to spin when the brake is on but still rotates smoothly when forced. If there is no added resistance or if the resistance is varies significantly throughout the rotation then there is an error in the wiring. Check the wiring in the junction box under the roof and at the brake switch for disconnected wires.

Electrical code states that the inverter must be placed within 4ft of the breaker panel. Ensure there is room on the wall near the electrical panel for the inverter.

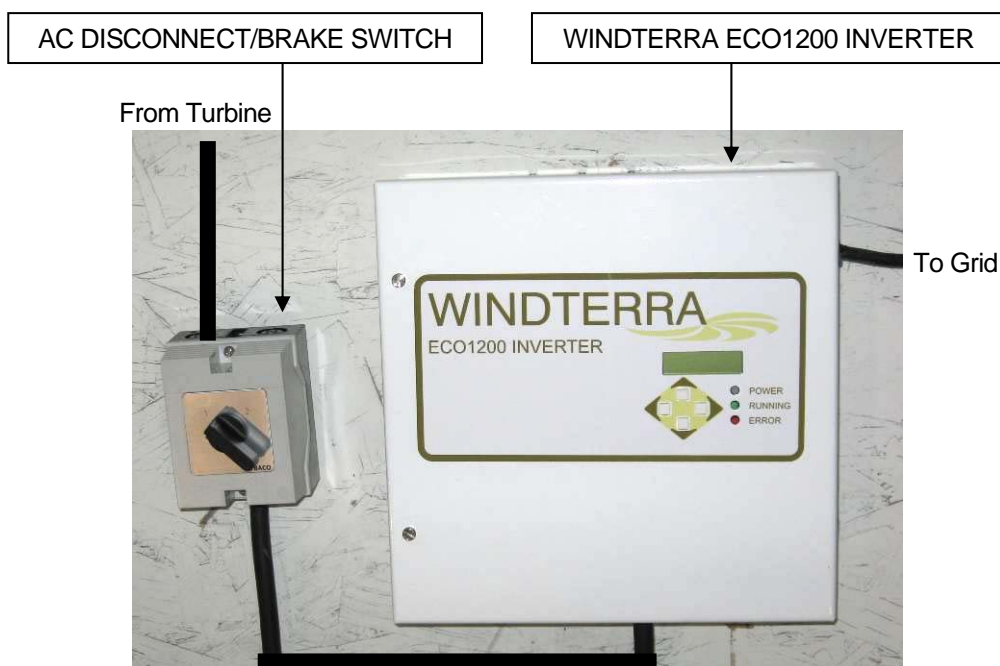


Figure 12 – Pictorial Wiring Diagram

Drill a 3/4" hole in the roof under the roof mount for the flexible conduit. Run the outdoor wire through the roof and connect to a junction box mounted under the roof to a rafter. Seal the roof hole with roofing tar. From the junction box run 3 conductor plus ground wire to the electrical room.

A minimum gauge of 14 should be used for the wiring, however, consult with your electrician to determine if a lower gauge is required for your particular application (long runs of wire will need a lower – thicker gauge).

A picture of the junction box is shown on the next page.



Figure 13 - Junction Box Wiring

The next step is to wire the **AC Disconnect / Brake Switch**. The wires from the generator and the wires to the inverter are inserted through the cover and then inserted into the correct terminals.

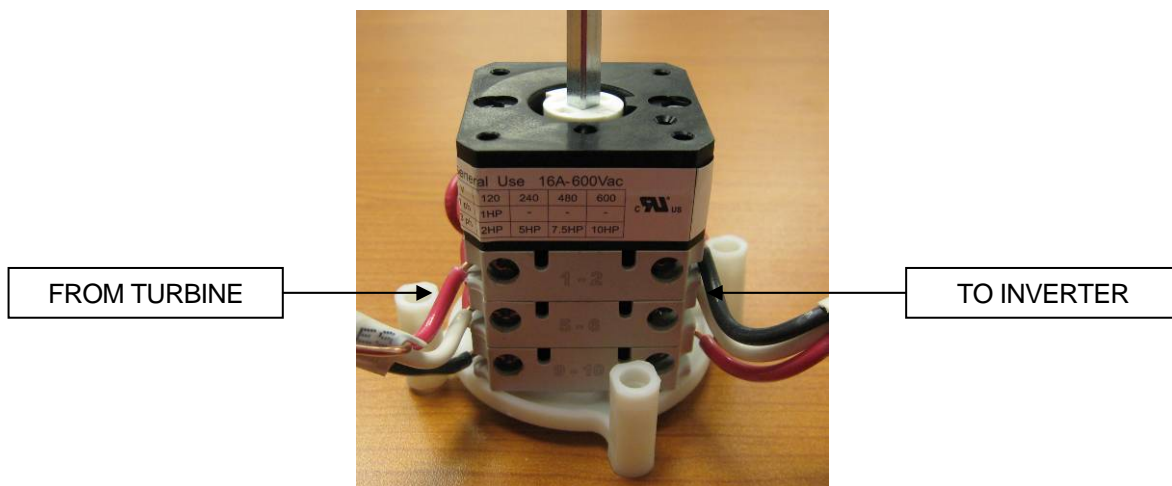


Figure 14 - AC Disconnect/Brake Switch Wiring.

The wires from the turbine are wired to the **AC DISCONNECT / BRAKE SWITCH**. Insert the wires through the punch-out on the top of the **AC DISCONNECT / BRAKE SWITCH** and into the terminals labeled 1, 5 and 9. It does not matter which wire is connected to which terminal for the turbine input.

Complete the switch wiring by connecting the bundled wire from the **WINDTERRA ECO1200 INVERTER** through the bottom punch-out to terminals 2, 6 and 10 of the **AC DISCONNECT / BRAKE SWITCH**. Mount the switch on the wall and replace the cover.

The bundled wire on the right side of the **WINDTERRA ECO1200 INVERTER** is wired to an **AC DISCONNECT SWITCH**. This switch must be wired as required by your local utility (it may be required to be placed outside beside your meter). Run 14/2 (or as specified by your electrician) wire from the **AC DISCONNECT SWITCH** to the electrical panel.

Turn the **AC DISCONNECT / BRAKE SWITCH** to position “2” to activate the brake before installing the rest of the turbine. Test the brake functionality as described in the introduction of the Electrical Installation.

Hub, Arm and Blade Assembly

- 5.1** Place the lower arms over the bolts on the top plate of the Generator Frame Assembly. All three arms must be installed as shown before installing the hub. Ensure leading edges (the rounded edge) of all the arms face in the direction shown in the following picture.



Figure 15 – Lower Arm Placement on the Generator Studs

- 5.2** Next, place the Hub on top of the arms with the bolts welded to the hub at the top. The hub slides over the 3 studs protruding from the generator. Insert a 2 ¾” bolt with a washer through the remaining holes in the hub and arms and place a washer and nut on the bottom side and hand tighten. The following figure shows the installed lower arm and hub.



Figure 16 - Hub and Lower Arm Placement

- 5.3** Next, attach one arm to the top arm attachment bracket of the blade. To know which attachment bracket is the “top”, stand the blade up with the attachment brackets facing you **with the leading edge (round**

edge) on your right side – the “top” attachment bracket is the upper one. Note that the arm leading edge (the rounded edge) and the blade leading edge point in the same direction. Use two 3/8” x 1 3/4” bolts and nuts with a washer on each side. See the figure below of an assembled arm attachment. Torque the bolts to specifications on the ground because once the blade is mounted there is no way to reach these bolts.



Figure 17 - Upper Arm Attachment

- 5.4** Next, the upper arm and blade attach to the hub. First place one Top Hub Spacer diagonally on the top bolt. Next, hang the upper arm and blade on the top of the hub as shown in the following figure.

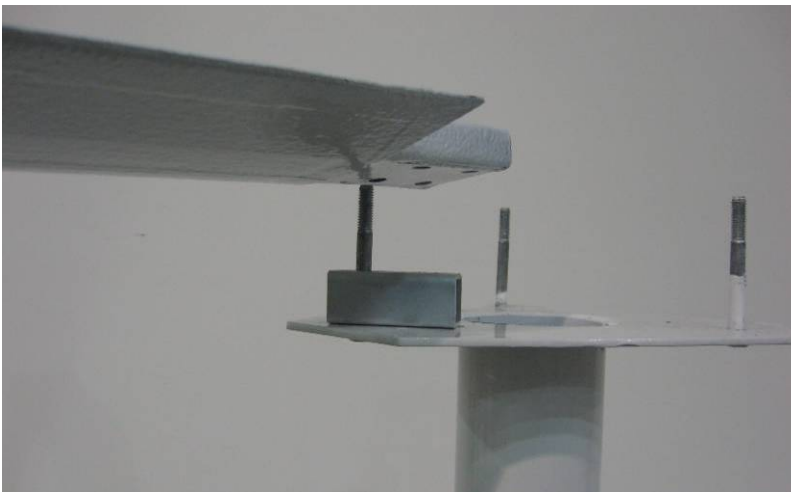


Figure 18 - Upper Arm Placement on Hub

- 5.5** Insert the rectangular aluminum arm bracket of the blade into the lower arm as seen in the following figure. Push the arm completely into the arm bracket to align the holes. Then insert two 3/8” x 1 3/4” bolts with washers and torque the nut to specification. Mount the other two blades and arms in the same manner.



Figure 19 - Lower Arm Bracket Mounting

- 5.6** Next, cap the three upper arms with the additional metal plate aligned through the three welded bolts. Insert another Top Hub Spacer block under each arm and align with the holes in the arm. Insert the remaining $\frac{3}{8}$ " x $3\frac{1}{2}$ " bolts down from the top through the arm and spacer blocks sandwiched between the two metal plates and tighten a nut and washer onto each. The following figure shows the upper arm attachment to the hub. **Note that there are two Top Hub Spacers under each arm.**



Figure 20 - Bolts on upper arm attachment

5.7 The arm tightening procedure is as follows:

- Have a partner stand back from the turbine and align a blade's leading edge with the hub so that they are parallel as shown in the following figure. Tighten one nut on the lower arm at the hub.
- Check the alignment of the blade again and then tighten one nut on the top arm at the hub.
- Repeat for each blade.
- Check that each blade is parallel to the hub and then begin tightening the rest of the bolts in a star-pattern (just as you would for the wheel of a car). Begin with all the lower arm bolts and torque to specifications, then move to the top arm to hub bolts and tighten to torque specifications (following the same star-pattern).
- Once done check that all of the blades are parallel to the hub.



Figure 21 – Blade to Hub Alignment. Note that the Hub and Blade are parallel.

6 Cover Assembly

The Hub Covers and Hub Top Cover are shown in the following schematic.

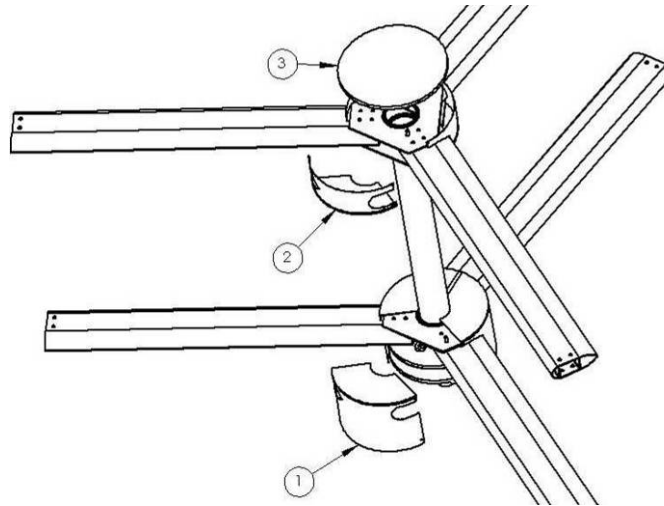


Figure 22 – Cover Assembly

1. Lower Hub Cover
2. Upper Hub Cover

3. Hub Top Cover

The Lower Hub Cover is the larger of the two similar sets of hub covers. The extra length extends over the bearing set to prevent rain from entering.

- 6.1** The three parts that comprise the lower hub cover are all inserted in the same manner. For all three parts of the lower hub cover, insert the cut-outs around the arm and push towards the steel hub tube. The following figure shows this insertion process.



Figure 23 - Mounting of the Hub Covers

- 6.2** Ensure that the covers overlap with the blind nuts on the inside cover. Now push the covers into their final position. Once all three covers are in place, screws are driven through the holes of one cover and into the blind nut of the inside cover. Six screws are used, one above and one below each of the arms as show in the following figures.



Figure 24 - Fastening of the Hub Covers

- 6.3** The upper hub covers are installed in the same manner as the lower hub covers. Refer to the following figure for the completed Upper Hub Covers. Do not install top screws until the Hub Top Cover is in place.



Figure 25 - Mounted Upper Hub Covers and Hub Top Cover

- 6.4** Insert the three parts of the Upper Hub Cover into position around the arm and ensure correct overlap with the blind nuts on the inside cover. Push into place as shown in the figure above. Only fasten the three screws on the lower blind nuts.
- 6.5** Place the Hub Top Cover over the Upper Hub Covers and align the 3 holes with the Upper Hub Covers. Fasten the Hub Top Cover through the hub covers to the blind nuts with three screws.

Operating Procedure

The wind turbine system runs automatically in all wind conditions.

The Windterra ECO1200 will automatically start spinning at very low wind speeds. It will produce and manage electrical loads, adjust to changing wind speeds and directions, and the inverter will shut down in the event of a power failure. No intervention with the wind turbine or electrical system is required.

The following section explains the use of the Safety Brake for turbine shutdown.

Safety Brake Operation

Shutting down the turbine is a simple operation that does not require any tools. When the Shutdown procedure is complete, the turbine may still spin slowly in moderate to high winds. Caution: do not attempt to stop spinning turbine by hand. It is also not advisable to go on the roof at high wind speeds.

The turbine brake stops the turbine from rotating for safe inspection of the blades and arms. To activate the brake, turn the **AC DISCONNECT / BRAKE SWITCH** to the number “2” position. Return the switch to the number “1” position to resume normal operation.

When to use the Safety Brake:

- You may use the safety brake anytime during normal wind conditions (see section below on storm conditions) to slow/stop the turbine.
- It is recommended that the Safety Brake be applied if extreme storm warnings are in effect, this will minimize the chance of damage occurring to the wind turbine caused by flying debris (tree branches, etc.)
- During storms: You may activate the safety brake during storms (periods of extreme high wind). It is recommended that you wait for a moment of lower wind speed to activate the brake.
- Abnormal noise or vibration: Should the wind turbine be damaged (for example from flying debris during storms), the Safety Brake should be activated and you should contact your Windterra dealer.

Maintenance Procedures

Regularly check your Windterra VAWT for physical damage which may have occurred due to exposure to the elements: Heavy winds, flying debris, and freezing rain or hail could cause damage to the turbine. Should there be any damage, contact your dealer.

Inspection Schedule

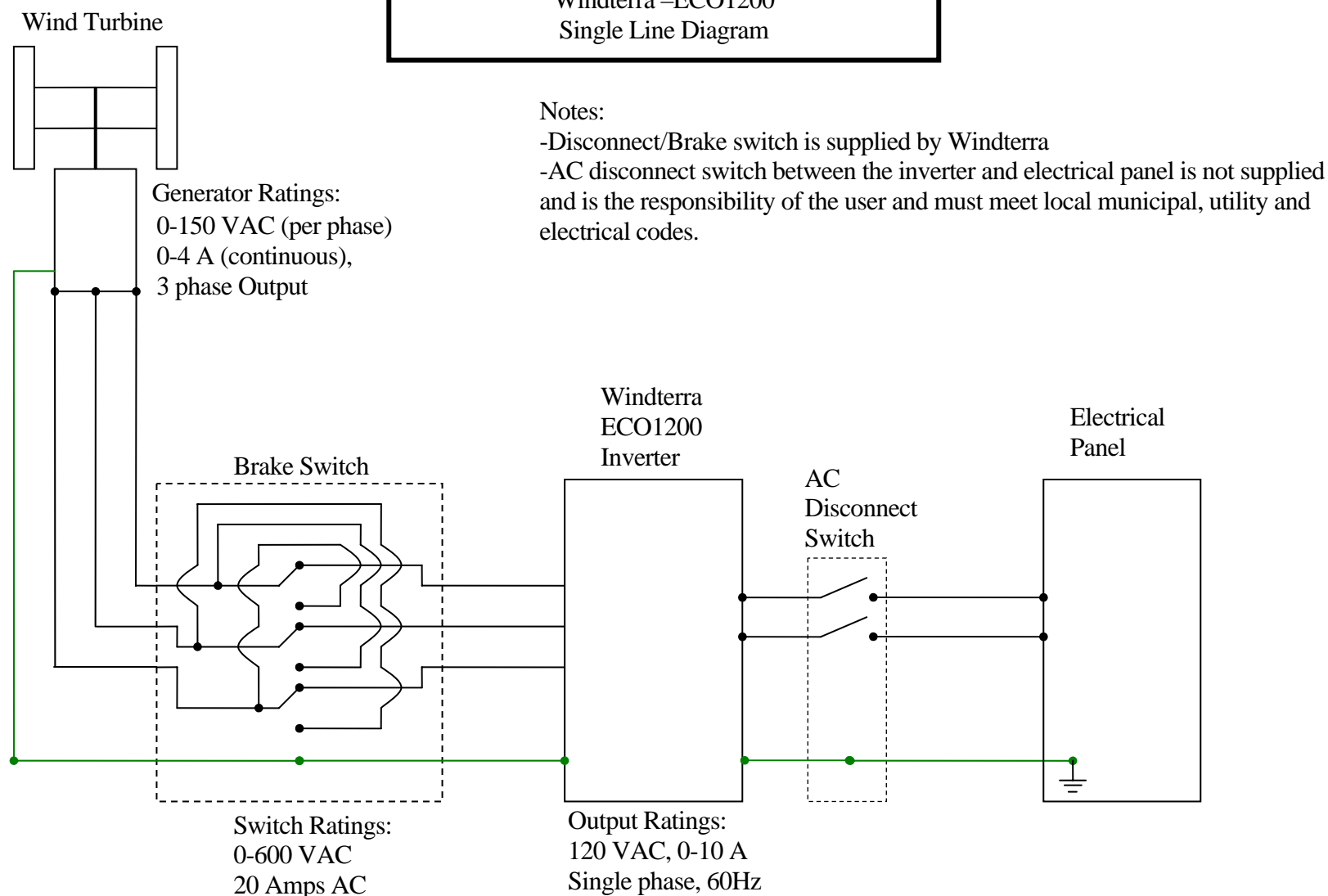
Perform the Safety Brake Operation followed by a visual inspection in the following scenarios. Check all the components of the turbine for damage.

- After the turbine has been subjected to harsh environment hazards.
- Every 6 months.

Appendix A: Single Line Wiring Diagram

WINDTERRA

Windterra –ECO1200
Single Line Diagram



Appendix B: Load Diagram

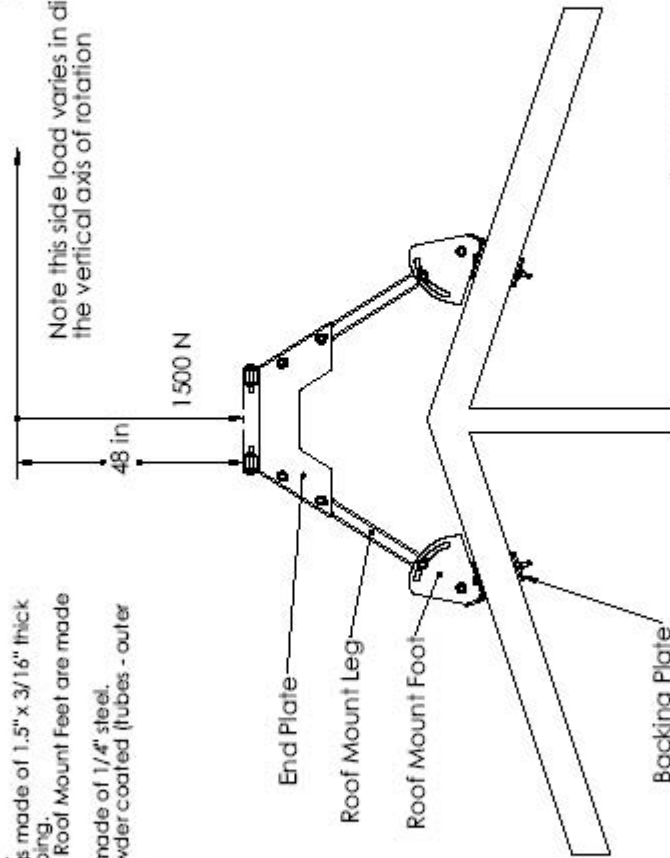
ECO1200 Roof Mount Loads

NOTES:

- All hardware is 3/8"-16.
- All bolts use flat washer on each end with nylock nut.
- Roof Mount legs made of 1.5" x 3/16" thick square steel tubing.
- End Plates and Roof Mount Feet are made of 3/16" steel.
- Backing plate made of 1/4" steel.
- All surfaces powder coated (tubes - outer surfaces only).

Max 2500N (563 lbf) at 53 m/s (120 mph) winds
Avg 350 - 630N (79 - 141 lbf) during rated power operation
(1200 Watts @ 12 m/s wind)

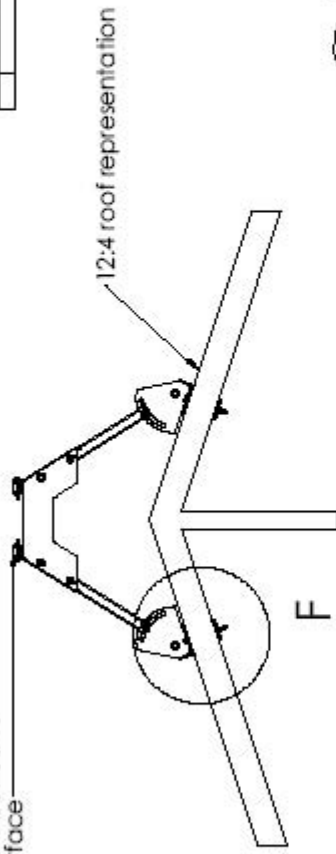
Note this side load varies in direction around the vertical axis of rotation



REV	REVISION DESCRIPTION	DATE	DRAWN
A		April 17 2007	ME
B	Add details to dwg	Aug 27 2007	ME
C	edit notes	Nov 7 2007	ME

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<p>DIMENSIONS ARE IN mm</p> <p>TOLERANCES:</p> <p>FRACTIONAL ±</p> <p>ANGULAR MAXIMUM ±</p> <p>TWO PLACE DECIMAL ±</p> <p>THREE PLACE DECIMAL ±</p>	<p>DWG. NO.</p> <p>DWG. DESCRIPTION</p> <p>ECO1200 Roof Mount Loads</p>	<p>PAGE 1 OF 3</p>

Roof mount - Wind
Turbine is bolted to
top surface



Roof Mount Foot

3/8" EPDM Rubber

3/8" EPDM Rubber

DETAIL F
SCALE 1:5

Under-roof clamp - this part
sandwiches the truss between
itself and the roof mount (3 trusses
on either side of the roof are clamped)

REV	DESCRIPTION	DATE	DRAWN
A	Added detail view	April 17 2007	ME
B	edit notes	Aug 27 2007	ME
C		Nov 7 2007	ME

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Appendix C: Windterra Product Warranty

A. Limited Warranty

Windterra Systems Inc. hereby warrants that the Products manufactured, supplied or repaired by Windterra Systems Inc. shall be free from defects in materials and workmanship for a period of five years after the date of shipment.

B. Limitation of Remedies

Windterra Systems Inc. and Windterra's duly appointed Distributors acknowledge and agree that purchasers of Windterra products or services have the sole remedy under this Limited Warranty. This warranty is limited to that value of the products purchased. The company's sole obligation is to the repair or replacement of the Products and services or any components thereof which are determined by Windterra Systems Inc. to be materially defective in material or workmanship or, at the sole option of Windterra Systems Inc., to refund of the purchase price of the Products or service in question. Windterra Systems Inc. shall not be liable for injury to property except for the Products themselves. This warranty does not cover loss outside of Windterra's control including but not limited to accidental damage, misuse, improper care or alteration, or acts of God, such as floods, hurricanes, tornados, hail, ice storms and earthquakes. This warranty lasts as long as the original purchaser owns the product; coverage terminates if the original purchaser sells or otherwise transfers the product.

C. Disclaimers from Warranty

THIS LIMITED WARRANTY IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED. THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE FACE OF THIS LIMITED WARRANTY AS TO THE FITNESS OF USE FOR THE PRODUCTS HEREUNDER FOR ANY PARTICULAR PURPOSE. WINDTERRA SYSTEMS INC. HEREBY DISCLAIMS ANY WARRANTY, WHETHER EXPRESS OR IMPLIED, THAT THE PRODUCTS HEREUNDER ARE MERCHANTABLE.

D. Products Covered by This Warranty

This Limited Warranty shall extend to the Products and components thereof manufactured, supplied or repaired by Windterra Systems Inc., but shall not extend to products, parts or equipment supplied by other manufacturers, installers or service agencies.

E. Automatic Termination of Warranty Obligations

Any obligation of Windterra Systems Inc. under this Limited Warranty shall automatically and immediately terminate, without notice from or any further action by Windterra Systems Inc., and Windterra Systems Inc. shall have no responsibility for damages of any kind as a result of the occurrence of any of the following:

- (i) accident, misuse, abuse or negligent use of the Products or any component thereof;
- (ii) any repair or alteration of the Products or any component thereof made outside Windterra Systems Inc.'s facility, except by an employee of Windterra Systems Inc. or agent authorized to do so;
- (iii) improper installation or operation (including both mechanical and electrical) of the products or any component thereof;
- (iv) installation in an environment which is not approved by authorized inspection agencies
- (v) failure to provide normal maintenance for the Products or any component thereof.
- (vi) failure to install in a safe environment (Windterra products operate at high speed and can severely injury people, pets or other living organisms; precaution must be taken to install these devices where contact from people, pets and other living organisms is not possible).
- (vii) failure to secure the unit (place the Windterra unit in a secure non-operational/non-moving state) during installation, maintenance or while working in close proximity to Windterra products will cause serious injury. Failure to secure the unit during installation, maintenance or while working in close proximity terminates all warranty obligations.

F. Limitation on Damages (Consequential Damages Excluded)

Windterra Systems Inc. shall not be responsible for, nor does this Limited Warranty extend to, any consequential or incidental damages or expenses of any kind or nature, regardless of the cause thereof or any knowledge which Windterra Systems Inc. may have regarding the probability of the occurrence of such damages or expenses including, without limitation, injury to persons or property, loss of use of the Products, lost goodwill, lost resale profits, work stoppage, impairment of other goods, breach of contract, negligence or such other actions as may be deemed or alleged to be the cause of a loss or damage to the Windterra's duly appointed Distributors, its agents, sub-Windterra's duly appointed Distributors, customers or any other persons.

G. No Other Warranties, Statements are Opinions

This is the only Warranty provided and no others are expressed or implied warranties of Windterra Systems Inc. and Windterra Systems Inc. does not assume, nor does it authorize any person to assume on its behalf, any other obligation or liability, either verbally or in writing. Windterra Systems Inc. and Windterra's duly appointed Distributors agree that any statements and representations made by Windterra Systems Inc. outside of this Limited Warranty are only Windterra Systems Inc.'s opinion, are not a part of the basis of the bargain and are not warranted to be accurate. Windterra Systems Inc. and Windterra's duly appointed Distributors further agree that if any statement by Windterra Systems Inc. in this Limited Warranty or in any agreement or correspondence, whether oral or written, between Windterra Systems Inc. and Windterra's duly appointed Distributors is construed as an affirmation or promise, it shall nevertheless not constitute a warranty that the Products or any component thereof will conform to such affirmation or promise.

H. Enforcement of Limited Warranty

Windterra's duly appointed Distributors will immediately notify Windterra Systems Inc. in writing of any Product or component thereof to be repaired or replaced pursuant to Paragraph A hereof. Windterra's duly appointed Distributors written notice shall specify the Product or component thereof as well as list the facts or reasons supporting or underlying Windterra's duly appointed Distributors claim for relief under this Limited Warranty. All customers shall be required to use Windterra's claim forms and processes when making all warranty claims. Allegedly defective Products or components thereof shall be returned to Windterra Systems Inc.'s facility at the sole cost of Windterra's duly appointed Distributors. In the event that Windterra Systems Inc. elects to repair or replace the allegedly defective Product or component thereof, Windterra Systems Inc. shall ship, at Windterra Systems Inc.'s expense, said replacement or repaired Product or component to Windterra's duly appointed Distributors via the lowest priced transportation available to Windterra Systems Inc.; provided, however, that Windterra Systems Inc. shall be obligated to ship and pay for deliveries only within 30 days from the point of a claim.

I. Strict Construction Rule Waived

Windterra's duly appointed Distributors hereby waives the benefit of any rule that disclaimers of warranty shall be construed against Windterra Systems Inc. and agrees that the disclaimers in this Limited Warranty and in the Agreement shall be construed liberally in favour of Windterra Systems Inc..

J. Other Rights

This Limited Warranty gives Windterra's duly appointed Distributors specific legal rights, and Windterra's duly appointed Distributors may also have other rights which may vary from state/province to state/province.

K. Product or Component Substitution

Windterra reserves the right to substitute any product or component repaired or replaced under warranty as it sees fit and is not obligated to provide exactly the same.